WE CLAIM:

1. A method for generating a porcine cell comprising at least one inactivated α-1,3 galactosyltransferase gene, the method comprising:

(a) providing a plurality of porcine cells;

(b) introducing into said cells the DNA construct comprising a disrupted porcine α-1,3 galactosyltransferase gene, wherein the disruption is by insertion of an exogenous sequence into said gene such that disruption prevents expression of functional α-1,3 galactosyltransferase, wherein the gene, prior to disruption, encodes a porcine α-1,3 galactosyltransferase with an amino acid sequence of SEQ ID NO:10;

(c) incubating said cells such that homologous recombination occurs between the chromosomal sequence encoding α-1,3 galactosyltransferase and the introduced DNA construct comprising the disrupted α-1,3 galactosyltransferase gene; and

(d) identifying a porcine cell comprising at least one inactivated α-1,3 galactosyltransferase gene,

wherein the gene, prior to disruption, encodes a porcine α-1,3 galactosyltransferase with an amino acid sequence of SEQ ID NO:10.

2. The method of claim 1, wherein said disruption is within exon 4, exon 7, exon 8, or exon 9 of the porcine α-1,3 galactosyltransferase gene.

3. The method of claim 1, wherein said exogenous sequence is a selectable marker.

4. The method of claim 3, wherein said selectable marker is selected from the group consisting of the neo^R gene and the hyg^R gene.

5. The method of claim 1, wherein said exogenous sequence is flanked at its 5' and 3' ends by FRT DNA elements, and wherein stop codons have been inserted 3' to the selectable marker for each of the three reading frames for the porcine α-1,3 galactosyltransferase gene.

6. A porcine cell comprising at least one disrupted α-1,3 galactosyltransferase gene, wherein the disruption is by insertion of an exogenous sequence into said gene such that the disruption prevents expression of functional α-1,3 galactosyltransferase and wherein the gene, prior to disruption, encodes the porcine α-1,3 galactosyltransferase with an amino acid sequence of SEQ ID NO:10, wherein the cell is *in vitro*.

7. The porcine cell of claim 6, wherein said disruption is within exon 4, exon 7, exon 8, or exon 9 of the porcine α-1,3 galactosyltransferase gene.

8. The porcine cell of claim 6, wherein said exogenous sequence is a selectable marker.

9. The porcine cell of claim 8, wherein said selectable marker is selected from the group consisting of the neo^R gene and the hyg^R gene.

10. The porcine cell of claim 6, wherein said exogenous sequence is flanked at its 5' and 3' ends by FRT DNA elements, and wherein stop codons have been inserted 3' to the selectable marker for each of the three reading frames for the porcine α-1,3 galactosyltransferase gene.

11. A method for eliminating or reducing hyperacute rejection of non-primate mammalian cells, tissues and organs by human serum, the method comprising adding, to said human serum, a physiologically acceptable amount of galactose or a saccharide in which the terminal carbohydrate is an α galactose linked at position 1, prior to exposure of said human serum to said non-primate cells, wherein said amount of galactose or saccharide is sufficient to reduce or eliminate said hyperacute rejection.

12. The method of claim 11, wherein the saccharide is selected from the group consisting of melibiose, galactose α1,3 galactose and stachyose.